Extending Juvenile Stage of Plants for Biofuels and Feedstock

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WARF: P120179US02

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods for delaying adult growth in grasses and other plants to improve digestibility, disease resistance and yield.

Overview

Juvenile and adult grass tissue dramatically differs in anatomy, chemistry and ability to withstand stresses. Juvenile plants cannot flower and their leaves are better able to resist cold and drought. Moreover, they may be easier to process for biofuels and more digestible when used as feed.

The genes controlling the transition from the juvenile to adult phase in plants are not fully understood. With new genetic information, the ability to arrest maturation could help ease biomass processing and boost yields, among other agronomic benefits.

The Invention

UW–Madison researchers have developed methods for locking plants in a juvenile state by modifying genes related to maturation.

The genes – GRMZM2G362718 or GRMZM2G096016 – have been analyzed by the researchers and shown to influence growth transition in corn. To alter plant development, these genes and their homologs could be knocked out or inhibited by small molecules or biologics. The process could involve additional genes known to affect juvenile to adult growth development.

Applications

- Genetically modified plants for bioenergy production and feed crops

Key Benefits

- Delays growth timing
- Biomass processing is cheaper and faster with juvenile plants.
- New animal feed could be easier to digest.
- May improve disease resistance and yields

Additional Information

For More Information About the Inventors

- Shawn Kaeppler
- Natalia de Leon Gatti

Related Technologies

- WARF reference number P01338US describes a gene from *Arabidopsis* that delays flowering and can be used to improve production of vegetables and forage crops.

Related Intellectual Property

- View Continuation Patent in PDF format.

Tech Fields

- Animals, Agriculture & Food : Plant biotech
- Animals, Agriculture & Food : Plant varieties
- Clean Technology : Biobased & renewable chemicals & fuels

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842